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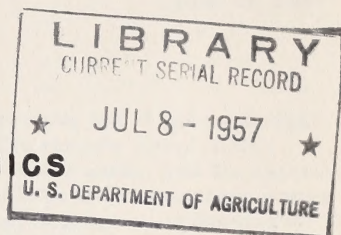
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THE PLANT DISEASE REPORTER

Issued By

PLANT DISEASE EPIDEMICS
and
IDENTIFICATION SECTION

AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE



A PRELIMINARY LIST OF NICARAGUAN PLANT DISEASES

Supplement 243

June 15, 1957



The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Plant Disease Epidemics and Identification Section serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

PLANT DISEASE EPIDEMICS AND IDENTIFICATION SECTION

Crops Research Division

Plant Industry Station, Beltsville, Maryland

A PRELIMINARY LIST OF NICARAGUAN PLANT DISEASES

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INTRODUCTION

Relatively little has been published on the plant diseases of Nicaragua and it seems desirable to present at this time available information on the subject. The records listed in this paper are based largely on the collections and observations of the senior author and his associates of the Department of Agronomy of the Servicio Tecnico Agricola de Nicaragua made during the course of the development of the cooperative agricultural research program in Nicaragua since 1952. Some records of collections by A. G. Kevorkian, P. C. Standley and F. W. Wellman have been included also. Identifications have been made by Paul L. Lentz and John A. Stevenson, National Fungus Collections, Beltsville, Maryland. Representative specimens have been, for the most part, deposited in the herbarium of the National Fungus Collections.

In the following account, plant diseases are presented on the basis of plants affected. The Latin or technical name as well as the English and Spanish names are included in the primary listing system. The pathogens of each plant are also listed in the three languages, the primary listing being in Latin and in alphabetical order. Causes other than fungi or bacteria are listed in English and Spanish.

Little attempt has been made to classify the plant diseases identified in the accompanying list as to their relative economic importance in Nicaragua. Most of the diseases encountered were distinctly damaging. Heaviest losses occurred under the most favorable conditions for disease development on completely susceptible plants. In most instances control measures are known and were prescribed to the grower.

Localities in which the different diseases were encountered are briefly described below for ready reference and interpretation:

Managua, Leon, Tipitapa, Chinandega, Rivas, Nandaimi, Chichigalpa, Granada, Corinto, and Homotepe are located on the Pacific side of the country at elevations of less than 500 feet above sea level, where the climate is typically tropical, the temperature and humidity high, and the rainfall distribution 6 months wet (May-October) and 6 months dry (November-May). The annual average rainfall varies between 35 and 80 inches, with Granada, Managua and Tipitapa averaging normally less than 55 inches per year, and the other locations normally receiving 70 to 80 inches. These centers are important producers of corn, cotton, beans, rice, sesame, sorghum, sugar cane, tobacco, and grass for dairying and some beef production.

Masatepe, Diriamba and Jinotepe are located on the fertile, volcanic ash soils on the Pacific side at elevations of 1,000 to 2,000 feet above sea level. The temperatures are more moderate than in the lower lying lands of the coastal plains of the Pacific and the rainfall averages between 75 and 85 inches per year. The dry season of 4 to 5 months is less severe than on the western coastal plains. In this zone about two-thirds of the annual coffee crop is produced.

Jinotega, Masatepe and Esteli are located at elevations of 2,500 to 4,500 feet above sea level in valleys of the Central American Cordillera, which extends from the northwest to the southeast. The soils are less fertile than the volcanic ash soils of western Nicaragua and for the most part are heavy in texture, or clay. The annual rainfall received is 75 to 100 inches per year and the rainy season lasts 6 to 9 months. The dry season is relatively cool. This area produces approximately one-third of the national coffee crop and in isolated sections are produced considerable amounts of corn, sorghum for grain, beans, wheat, potatoes, henequen,

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vegetable and fruit crops, and pasture for livestock. In the slightly lower and drier areas of this same general area such as Ocotol, Sebaco and Condega, cotton and tobacco are also grown. Under irrigation in the dry season onions, vegetable crops and tobacco are also extensively grown in these areas.

Masaya is located at an elevation of about 750 feet above sea level and has a climate intermediate between those of Managua and Diriamba. The fertile soil is of volcanic origin. The crops grown here are similar to those listed for the Pacific lowlands.

El Recreo is located on the Atlantic side of Nicaragua, which mostly consists of wet lowlands, largely covered by tropical forests and jungles. The dry season is of only 3 months duration (February-April). The principal agricultural product is the banana, although coconuts, plantains, oranges and pineapple are also grown. Recently the planting of cacao and African oil palm has been encouraged.

LIST OF DISEASES

AGAVE SPP. (Cabuya o Penca, Henequen)

Dothidella parryi (Farl.) Th. & Syd. (Endothia parryi (Farl.) Cke., Plowrightia williamsoniana Kell.) (Mancha circular de la hoja, Leaf spot)
Managua.

ALLIUM CEPA (Cebolla, Onion)

Alternaria porri (Ell.) Cif. (Mancha purpura, Purple blotch)
Sebaco, generally prevalent in this area where onions are extensively grown.

Aspergillus niger V. Tiegh. (Moho negro, Black mold)
Sebaco.

Erwinia carotovora (Jones) Holland (Pudricion del bulbo, Soft rot)
Sebaco.

Fusarium malli Taub. (Raiz rosada, Pink root)
Sebaco, on heavier soils with inadequate drainage or where improper irrigation is practiced.

Fusarium oxysporum Schlecht. (Marchitez, Wilt)
Sebaco.

ARACHIS HYPOGAEA (Mani, Peanut)

Cercospora arachidicola Hori (Mancha cercospora cafe, Brown leaf spot)
Managua.

Cercospora personata Berk. & Curt. (Mancha de la hoja, Leaf spot)
Managua.

Puccinia arachidis Speg. (Roya de la hoja, Leaf rust)
Managua.

Sclerotium rolfsii Sacc. (Pudricion del tallo, Stem rot)
Managua.

AVENA SATIVA (Avena, oats)

No diseases encountered in the limited plantings observed.

BETA VULGARIS (Remolacha, Beet)

Cercospora beticola Sacc. (Mancha de la hoja, Leaf spot)
Managua, Masatepe, Matagalpa.

Nematodes (Nemátodos)

Metagalpa, Sebaco, Masaya, Masatepe.

BOEHMERIA NIVEA (Ramie)

No diseases have been noted on this plant during the five years of observation at Managua.

BRASSICA OLERACEA CAPITATA L. (Repollo, Cabbage)

Rhizoctonia solani Kuehn (Mal del talluelo, Damping off)
Managua.

Nematodes (Nemátodos)

Metagalpa, Sebaco, and Masatepe.

BRASSICA PEKINENSIS (Repollo Chino, Chinese cabbage)

Alternaria brassicae (Berk.) Sacc. (Mancha foliar, Leaf spot)
Matagalpa.

BRASSICA RAPA (Nabo, Turnip)

Alternaria brassicae (Berk.) Sacc. (Mancha foliar, Leaf spot)
Managua, Matagalpa.

CAESALPINIA SP.

Lenzites striata Fr. (Pudricion de la madera, Wood rot)
General.

Polyporus licnoides Mont. (Pudricion de la madera, Wood rot)
General.

Polyporus sanguineus Fr. (Pudricion de la madera, Wood rot)
General.

CAJANUS CAJAN (Gandul, Pigeon pea)

Fusarium sp.
Managua.

Sclerotium rolfsii Sacc. (Podredumbre de la raiz y del cuello, Stem rot)
Managua.

Uromyces dolicholi Arth. (Roya de la hoja, Leaf rust)
Managua.

Virus (Mosaico)

A "crazy top" virus, new growths bushy, leafy, etc., was in epiphytotic proportions in all seedings of pigeon pea in the Managua area in 1956. Prior to this, infected plants were rare.

CAVALIA ENSIFORMIS (Canavalia, Jack bean)

Unidentified wilt and virus diseases have been limiting factors in the utilization of this crop at Managua.

CAPSICUM FRUTESCENS (Chiltoma, Pepper)

Cercospora capsici Heald & Wolf (Mancha de la hoja, Leaf spot)
Managua.

Virus (Mosaico, Shoestring, yellowing, crinkle, etc.)

Unidentified viruses are frequently common in garden plantings.

CARICA PAPAYA (Papaya)

Asperisporium caricae (Speg.) Maubl. (Pucciniopsis caricae (Speg.) Seaver)
(Mancha foliar, Leaf spot)
El Recreo, Managua.

Virus (Mosaico)

Characterized by severe malformation of older leaves and stunting and mottling

of young growth, prevalent at Managua.

CARTHAMUS TINCTORIUS (Safflower)

Cladosporium herbarum Fr.
Managua.

Fusarium sp. (Marchitez, wilt)
Managua.

Rhizoctonia solani Kuehn (Mal del tallo, Stem rot)
Managua.

CENCHRUS PALLIDUS (Mozote o Abrojo de Arenales, Sandbur)

Puccinia cenchri Diet. & Holw. (Roya, Rust)
Chinandega. Observed in uredial stage.

Sorosporium syntherismae (Pk.) Farl. (Carbon, Smut)
Masaya, Realejo.

CHLORIS VIRGATA (Zacate pluma, Feather grass)

Helminthosporium sativum Pammel, King & Bakke (Mancha foliar, Leaf spot)
Managua.

Phyllachora boutelouae Rehm (Mancha alquitranosa, Tar spot)
Sebaco. Also on Chloris sp., Dept. Esteli.

CITRULLUS VULGARIS (Sandia, Watermelon)

Colletotrichum lagenarium (Pass.) Ell. & Halst. (Antracnosis, Anthracnose)
Managua.

Mycosphaerella citrullina (C. O. Sm.) Gross. (Pudricion del tallo, Stem rot)
Managua.

Pseudoperonospora cubensis (Berk. & Curt.) Rostow. (Mildiú, Downy mildew)
Managua.

CITRUS AURANTIUM (Naranja agrio, Sour orange)

Rhizoctonia solani Kuehn (Mal del talluelo, Damping off)
Managua, Masatepe.

CITRUS SINENSIS (Naranja, Orange)

Fumago vagans Fr. (Fumagina, Sooty mold)
Managua, Masatepe.

Sphaceloma fawcettii Jenkins (Roña, Scab)
El Recreo.

Xylaria cornu-damae (Schw.) Berk. (Pudricion de la madera, Wood rot)
Managua.

COFFEA ARABICA (Cafe, Coffee)

Cercospora coffeicola Berk. & Cke. (Mancha cercospora, Leaf spot)
Esteli, Managua.

Colletotrichum coffeanum Noack (Antracnosis, Anthracnose)
General.

Corticium salmonicolor Berk. & Br. (Mal rosado, Pink disease)
General.

Helminthosporium sp. (Mancha foliar, Leaf spot)

General.

Omphalia flavida Maubl. & Rangel (Mycena citricolor (Berk. & Curt.) Sacc.)

(Ojo de gallo, Eye spot)

General.

Pellicularia koleroga Cke. (Pellejillo, Thread blight)

Diriamba, Masatepe.

Rhizoctonia solani Kuehn (Mal del talluelo, Damping off)

Managua, Masatepe, Jinotepe.

Rosellinia bunodes (Berk. & Br.) Sacc. (Pudricion de la raiz, Black root-rot)

General.

CROTALARIA STRIATA (Crotalaria)

Rhizoctonia solani Kuehn (Mal del talluelo, Damping off)

Managua.

Nematodes (Nemátodos)

Diriamba.

CUCUMIS MELO (Melon, Cantaloupe)

Colletotrichum lagenarium (Pass.) Ell. & Halst. (Antracnosis, Anthracnose)

Managua.

Pseudoperonospora cubensis (Berk. & Curt.) Rostow. (Mildiú, Downy mildew)

Managua.

Pseudomonas lachrymans (E. F. Sm. & Bryan) Carsner (Mancha angular de la hoja,

Angular leaf spot)

Managua.

Virus (Mosaico).

The virus diseases common to other cucurbits are also found in the cantaloupe wherever grown.

CUCUMIS SATIVUS (Pepino, Cucumber)

Erysiphe cichoracearum DC. (Mildiú polvoriento, Powdery mildew)

Managua, Sebaco. Observed only in the oidium stage.

Colletotrichum lagenarium (Pass.) Ell. & Halst. (Antracnosis, Anthracnose)

Managua.

Pseudomonas lachrymans (E. F. Sm. & Bryan) Carsner (Mancha angular de la hoja,

Angular leaf spot)

Managua.

Pseudoperonospora cubensis (Berk. & Curt.) Rostow. (Mildiú, Downy mildew)

At Managua and vicinity this is a common disease and often destructive.

Rhizoctonia solani Kuehn (Mal del talluelo, Damping off)

Managua.

Virus (Mosaico)

An unidentified virus characterized by severe mottling of leaves and stunting was prevalent in the Managua area on almost all of the older plantings.

CUCURBITA PEPO (Pipian, Squash)

Erysiphe cichoracearum DC. (Mildíu polvoriento, Powdery mildew)
Managua, Sebaco. Observed in the oidium stage.

Pseudoperonospora cubensis (Berk. & Curt.) Rostow. (Mildíu, Downy mildew)
Managua.

Virus (Mosaico)

An unidentified virus disease characterized by severe mottling of leaves and stunting is commonly encountered in the vicinity of Managua.

CYNODON DACTYLON (Zacate de gallina, Bermuda grass)

Helminthosporium cynodontis Marig. (Mancha foliar, Leaf blight)
Managua.

Helminthosporium giganteum Heald & Wolf (Mancha foliar, Leaf blight)
Managua.

Puccinia cynodontis Lacroix (Roya, Rust)

Chinandega, Jinotega, Managua. (At times at Managua common Bermuda grass lawns are devoid of green leaves because of this rust and the leaf spot fungi.)

CYPERUS ROTUNDUS (Coyolillo, Nut grass)

Puccinia canaliculata (Schw.) Lagh. (Roya, Rust)
Chinandega, Esteli, Managua.

DAHLIA VARIABILIS (Dalia, Dahlia)

Entyloma dahliae Syd. (Carbon foliar, Leaf smut)
Matagalpa.

DAUCUS CAROTA SATIVA (Zonahoria, Carrot)

Alternaria dauci (Kuehn) Groves & Skolko (Mustia foliar, Leaf blight)
Matagalpa.

Erwinia carotovora (Jones) Holland (Pudricion blanda, soft rot)
Sebaco.

Nematodes (Nemátodos)

Matagalpa, Sebaco, Masatepe, Masaya.

DIANTHUS CARYOPHYLLUS (Clavel, Carnation)

Colletotrichum dematium (Fr.) Grove (Antracnosis, Anthracnose)
Matagalpa.

Septoria dianthi Desm. (Mancha foliar, Leaf blight)
Matagalpa.

DIGITARIA DECUMBENS (Zacate pangola, Pangola grass)

Piricularia grisea (Cke.) Sacc. (Mancha foliar, Leaf spot)
Managua.

DOLICHOS LABLAB (Dolicos, Hyacinth bean)

Cercospora canescens Ell. & G. Martin (Mancha cercospora, Leaf spot)
Chinandega, Managua

Leveillula taurica (Lév.) Arn. (Mildíu, Mildew)

Managua. Observed in the conidial stage.

EMILIA sp.

Puccinia emiliae P. Henn. (Roya, Rust)
Managua.

ERAGROSTIS sp.

Uromyces eragrostidis Tracy (Roya, Rust)
Esteli.

EUCHLAENA MEXICANA (Teosinte)

Claviceps tripsaci F. L. Stevens & Hall (Cornezuelo, Ergot)
General.

EUPHORBIA PULCHERRIMA (Pascua, Poinsetta)

Spheceloma poinsettiae Jenkins & Ruehle (Roña, Spot anthracnose)
Managua.

FICUS CARICA (Higo, Fig)

Physopella fici (Cast.) Arth. (Roya de la hoja, Leaf rust)
Managua.

GLYCINE MAX (Frijol soya, Soy bean)

Cercospora canescens Ell. & G. Martin (Mancha cercospora, Leaf spot)
Managua.

Cercospora kikuchii (Mats. & Tomoy.) Gardner (Mancha purpura, Mancha foliar,
Purple speck, Leaf spot)
Managua, Jinotega.

Helminthosporium vignicola (Kawamura) L. Olive (Corynespora cassiicola (Berk. &
Curt.) Wei) (Mancha foliar, Target spot)
Managua.

Xanthomonas phaseoli (E. F. Sm.) Dows. var. sojensis (Hedges) Starr & Burkh.
(Pustula bacterial, Bacterial pustule)
Managua, Jinotega.

Virus (Mosaico)

Various unidentified virus diseases were observed at Managua and if soybeans became a commercial crop virus would probably become an important production factor.

GONOLOBUS sp. (Bejuco)

Puccinia gonolobi Rav. (Roya, rust)
Granada.

GOSSYPIUM HIRSUTUM (Algodon, Cotton)

Alternaria macrospora Zimm. (Mancha foliar, Leaf blight)
Managua, Tipitapa.

Diplodia gossypina Cke. (Podredumbre de la guayaba, Boll rot)

Managua. (May have been secondary as it was found growing profusely on plants believed destroyed by lightning and occasionally on rotted bolls.)

Fumago vagans Fr. (Fumagina, Sooty mold)
Chinandega, Leon, Malpaiesello, Managua.

Fusarium moniliforme Sheldon (Pudricion rosada de la guayaba, Pink boll rot)
Chinandega.

Fusarium oxysporum Schlecht. (Marchitez, Fusarium wilt)
Managua.

Fusarium roseum Lk. (Pudricion de la guayaba, Boll rot)
Chinandega.

Fusarium solani (Mart.) Appel & Wr. (Pudricion de las guayabas, Boll rot)
Chinandega.

Fusarium vasinfectum Atk. (Marchitez, Fusarium wilt)
Chinandega, Managua.

Pythium sp. (Mal del tallulo, Damping off)
Managua, Tipitapa.

Ramularia areola Atk. (Mildiú areolado, Areolate mildew)
Chinandega, Esteli, Leon, Managua, Matagalpa, Ocotol, Pueblo Nuevo, Rivas, Tipitapa.

Rhizoctonia solani Kuehn (Mal de las plantulas y Mancha foliar, Sore shin, Leaf blight)
San Rafael del Sur, Managua, Masaya, Tipitapa.

Verticillium albo-atrum Reinke & Berth. (Marchitez, Verticillium wilt)
Homotepe, Leon, Managua, Masaya, Chinandega.

Xanthomonas malvacearum (E. F. Sm.) Dows. (Mancha angular, Angular leaf spot)
Chinandega, Esteli, Managua, Matagalpa, Rivas, Tipitapa. (This bacterium has been responsible for boll rot and black arm. At present it is considered one of the most destructive of all the cotton diseases.)

Lightning Damage (Daño de rayo)

The sudden appearance of variously-sized areas with plant portions above ground dead and the roots yet sound usually signifies destruction by lightning. Damage from lightning is heavy in some areas.

2, 4-D Damage (Daño de 2, 4-D)

Distorted elongated leaves, malformed flowers, squares, etc., have been observed where spraying machinery has previously been used for weed control in sugar cane or rice. In some cases vapor from plots treated with 2, 4-D has caused damage. In all cases the cotton plants recovered. Farmers are being constantly warned of this danger.

BHC Toxicity (Toxicidad de BHC)

A third non-infectious difficulty at times alarming to cotton farmers has been the heavier-than-recommended use of BHC insecticide. If several times in excess, severe burning of the foliage and young stems may result, but if over-dose is only moderate the vegetative growths may only be reduced, yellowed, and malformed.

Virus (Mosaico)

At least three unidentified virus diseases can be recognized. None of them have reached epiphytotic proportions as yet. Infections are always greatest near the borders of the fields. Cotton plants infected early with virus may produce none or very few bolls.

HELIANTHUS ANNUUS (Girasol, Sunflower)

Fusarium sp. (Mal del tallo, Stem canker)
Managua.

Macrophomina phaseoli (Mauubl.) Ashby (Ashby blight)
Managua.

HEVEA BRASILIENSIS (Hule, Rubber)

Dothidella ulei P. Henn. (Mancha Sud Americana, South American leaf disease)
El Recreo.

Helminthosporium heveae Petch (Ojo de pajaro, Bird's eye spot)
El Recreo.

HIBISCUS CANNABINUS (Kenaf)

Rosellinia solani Kuehn (Mal del tallo, Stem rot)
Managua.

Virus (Mosaico)
At least one unidentified virus has been prevalent in the plantings at Managua.

HIBISCUS SABDARIFFA (Rosella, Roselle)

Rhizoctonia solani Kuehn (Mal del talluelo, Pudricion radicular, Root rot)
Managua.

HYPARRHENIA RUFA (Zacate de Jaragua, Jaragua grass)

Helminthosporium sp. (Mancha foliar, Leaf spot)
Managua. (There are no reports of any imperfect fungi on this grass; an expert might consider naming this species).

HYPTIS SUAVEOLENS (Menta, Wild mint)

Puccinia medellinensis Mayor (Roya, Rust)
Realijo.

IPOMOEA BATATAS (Camote or Batata, Sweetpotato)

Colletotrichum gloeosporioides Penz. (Antracnosis, Anthracnose)
Managua.

Phyllosticta batatas (Thuem.) Cke. (Mancha foliar, Leaf spot)
Managua.

IXOPHORUS UNICETUS (Zacate dulce o Chompipe, Turkey grass)

Puccinia chaetochloae Arth. (Roya foliar, Leaf rust)
Managua.

JACQUINIA AURANTIACA

Phyllachora inclusa (Berk. & Curt.) Sacc. (Mancha alquitranosa, Tar spot)
Dept. Chontales.

LUPINUS ANGUSTIFOLIA (Lupino, Lupine)

Colletotrichum dematium (Fr.) Grove (Antracnosis, Anthracnose)
Managua.

Rhizoctonia solani Kuehn (Pudricion radicular, Root rot)
Managua.

LYCASTE sp. (Orquidie, Orchid)

Gloeosporium maxillariae Allesch. (Antracnosis, Anthracnose)
General distribution.

LYCOPERSICON ESCULENTUM (Tomate, Tomato)

Alternaria solani (Ell. & G. Martin) Sor. (Mustia temprana, Early blight)
Managua, Sebaco.

Phytophthora infestans (Mont.) d By. (Mustia tardia, Late blight)
Managua.

Nematodes (Nemátodos)
Matagalpa, Sebaco.

Virus (Mosaico).

Wherever tomatoes are grown individual plants are variously infected with virus -- leaf mottling, stunting, yellowing, etc.

MANIHOT UTILISSIMA (Yuca, Cassava)

Cercospora caribaea Chupp & Cif. (Mancha blanca de la hoja, White leaf spot)
Managua.

Cercospora henningsii Allesch. (Mancha grande de la hoja, Large leaf spot)
Managua.

Virus (Mosaico)

An unidentified virus was observed in the Rivas area. The leaves become mottled and deformed and the plants dwarfed.

MEDICAGO LUPULINA (Lupulina, Yellow trefoil)

Rhizoctonia solani Kuehn (Tizon, Blight)
Managua.

MEDICAGO SATIVA (Alfalfa)

Bacterium alfalfae Riker, F. R. Jones & Davis (?).

Bacterial leaf spots collected at Managua are designated as this species although verification has not been made.

Colletotrichum dematium (Fr.) Grove
Managua.

Colletotrichum graminicola (Ces.) G. W. Wils. (Antracnosis, Anthracnose)
Managua.

Sclerotium rolfsii Sacc. (Podredumbre de la raiz y del cuello, Southern blight)
Managua. Prevalent in both young and older plants.

Uromyces striatus Schroet. (Roya, Rust)

Managua. At this lower elevation it is serious, especially if the crop is allowed to go to seed.

Xanthomonas alfalfa (Riker, L. R. Jones & Davis) Dows. (Mancha bacterial, Bacterial leaf spot)
Managua.

MUCUNA DEERINGIANUM (Frijol terciopelo o Stizolobium, Velvet bean)

Cercospora stizolobii Syd. (Mancha cercospora, Leaf spot)
Managua. On older plants defoliation may be complete.

Sclerotium rolfsii Sacc. (Podredumbre de la raiz y del cuello, Southern blight)
Managua. On younger plants stand losses may be high.

MUSA PARADISIACA SAPIENTUM (Banano, Banana)

Cercospora musae Zimm. (Sigatoka o Chamusco, Leaf blight)

Masatepe. This disease caused banana production to be reduced from a major enterprise to one of minor importance on the Atlantic Coast of Nicaragua.

Fusarium sp. (Marchitez, Wilt)

Managua, Rivas, Tipitapa.

Helminthosporium torulosum (Syd.) Ashby (Mancha negra de foliaje, Black spot)

Masatepe.

NICOTIANA TABACUM (Tobaco, Tobacco)

Cercospora nicotianae Ell. & Ev. (Mancha cercospora, Leaf spot)

Managua.

Pythium sp. (Pudricion radicular, Root rot)

Managua.

Rhizoctonia solani Kuehn (Mal del tallulo, Damping off)

Managua.

Virus (Mosaico).

Several types of mosaic have been observed in the tobacco areas although no attempt has been made to identify them.

OLYRA LATIFOLIA

Puccinia deformata Berk. & Curt. (Roya, Rust)

Dept. Chontales.

ORYZA SATIVA (Arroz, Rice)

Cercospora oryzae Miyake (Mancha cercospora, Leaf spot)

Managua.

Helminthosporium oryzae Breda de Haan (Mancha de la hoja, Brown spot)

Chinandega, Managua, Rivas. This is generally the most prevalent of the rice diseases.

Phaeosphaeria oryzae Miyake (Trematosphaerella oryzae (Miy.) Padwick)

Managua.

Piricularia oryzae Cav. (Cabezas mustias, Blast)

Chinandega, Leon, Managua, Rivas. In some fields and during some years losses have been great.

Ustilaginoidea virens (Cke.) Tak. (Carbon falso, False smut)

Masaya, Nandaime.

Xanthomonas oryzae (Uyedo & Ishiyama) Dows. (Tizon bacterial, Bacterial blight)

Managua.

PANICUM MAXIMUM (Zacate de Guinea, Guinea grass)

Cercospora fusimaculans Atk. (Mancha cercospora, Leaf spot)

Managua.

Helminthosporium sp. (Mancha foliar, Leaf spot)

Managua.

PANICUM PILOSUM

Balansia strangulans (Mont.) Diehl

El Recreo.

PANICUM POLYGONATUM

Dothichloë nigricans (Speg.) Chardon
El Recreo.

PANICUM PURPURASCENS (Zacate de Para, Paragrass)

Fusarium sp.
Managua.

PASPALUM CONJUGATUM

Myriogenospora paspali Atk.
Cukra Hill.

PASPALUM NOTATUM (Zacate Bahia, Bahia grass)

Cladosporium herbarum Fr. (Mancha foliar, Leaf spot)
Managua.

Curvularia sp. (Mancha foliar, Leaf spot)
Managua.

Ramularia sp. (Mancha foliar, Leaf spot)
Managua.

PASPALUM VAGINATUM (Seashore paspalum)

Phyllachora cornispora Atk. (Mancha alquitranosa, Tar spot)
Managua.

PENNISETUM CLANDESTINUM (Zacate kikuyu, Kikuyu grass)

Piricularia grisea (Cke.) Sacc. (Mancha foliar, Leaf spot)
Managua. At these lower elevations this leaf spot fungus limits Kikuyu grass as a forage producer.

PENNISETUM PURPUREUM (Zacate Elefante o Napier, Napier grass)

Fusicladium sp. (Mancha foliar, Leaf spot)
Casa Colorado, Chinandega, Managua. This may be an undescribed species.

PERSEA AMERICANA (Aguacate, Avocado)

Cercospora purpurea Cke. (Mancha de la fruta y hoja, Leaf and fruit spot)
Found on fruit from Managua.

PHASEOLUS AUREUS (Frijol mungo, Mung bean)

Erysiphe polygona DC. (Mildiú polvoriento, Powdery mildew)
Chinandega, Jinotega, Managua. Extent of the powdery mildew disease at all locations was very heavy. Successive plantings were more quickly infected.

Fusarium oxysporum Schlecht. f. vasinfectum (Atk.) Snyder & Hansen.
Managua.

Phyllosticta phaseolina Sacc. (Mancha foliar, Leaf blotch)
Managua.

Virus (Mosaico)

At Jinotega a yellow leaf mottling was evident in 100 percent of the plants. At lower elevations this was apparently not expressed.

PHASEOLUS VULGARIS (Frijol, Bean)

Colletotrichum lindemuthianum (Sacc. & Magn.) Scribner (Antracnosis, Anthracnose)
Chinandega, Esteli, Jinotega, Managua, Matagalpa.

Colletotrichum truncatum (Schw.) Andrus & Moore (Antracnosis, Stem Anthracnose)
Managua.

Erysiphe polygoni DC. (Mildíu polvoriento, Powdery mildew)
Esteli, Jinotega.

Fusarium sp. (Marchitez, Wilt)
Managua.

Isariopsis griseola Sacc. (Mancha angular de la hoja, Angular leaf spot)
Esteli, Matagalpa, Managua. Some damage from this angular leaf spot has been observed wherever beans are grown.

Ramularia phaseolina Petrak (Mancha foliar, Leaf spot)
Esteli.

Rhizoctonia solani Kuehn (Chancro del tallo, Damping off)
Managua.

Sclerotium rolfsii Sacc. (Podredumbre de la raíz y del cuello, Southern blight)
Managua.

Uromyces phaseoli (Reb.) Wint. (Roya, Rust)
Esteli, Jinotega, Matagalpa. Some damage by defoliation from rust has been observed wherever beans are grown.

Xanthomonas phaseoli (E. F. Sm.) Dows. (Tizon bacterial, Bacterial blight)
Managua.

Virus (Mosaico)
At the lower elevations especially a number of virus diseases (dwarfing, rugose, yellowing, mottling, etc.) manifest themselves and in many instances become limiting factors in growing a crop.

PSIDIUM GUAJAVA (Guayaba o Guava, Guava)
Meliola psidii Fr. (Tizon negro, Black mildew)
Castillo Viejo.

RICINUS COMMUNIS (Higuerilla, Castor bean)
Cercospora ricinella Sacc. & Berl. (Mancha cercospora, Leaf spot)
Managua.

Sclerotinia ricini Godfrey (Moho gris, Gray mold)
Managua.

Xanthomonas ricinicola (Elliott) Dows. (Mancha bacterial, Bacterial spot)
Managua.

ROSA ODORATA (Rosa, Rose)
Actinonema rosae (Lib.) Fr. (Mancha negra, Black spot)
Managua, Matagalpa, Masatepe, Chinandega, Masaya. This common leaf spot disease caused severe defoliation, especially during the rainy season.

Sphaerotheca pannosa (Wallr.) Lévl. (Mildíu polvoriento, Powdery mildew)
Masatepe, Matagalpa, Jinotega.

SACCHARUM OFFICINARUM (Cana de azucar, Sugar cane)
Colletotrichum falcatum Went (Physalospora tucumanensis Speg.) (Podredumbre roja o pudrición de la semilla)
Chichigalpa, Managua.

Fusarium moniliforme Sheldon (Pudricion del cogollo o Pokkah boeng, Top rot)
Chichigalpa, Managua.

Helminthosporium sacchari (Breda de Haan) Butl. (Mancha de ojo, Eye spot)
Chichigalpa, Managua.

Virus (Mosaico)

Streak and stunt virus are the most common types prevalent.

SCIRPUS sp. (Cola de caballo, Sedge)

Puccinia obtecta Pk. (Roya, rust)
Granada.

SECHIU EDULE (Chayote)

Erysiphe cichoracearum DC. (Mildiú polvoriento, Powdery mildew)

Esteli, Leon, Managua, Matagalpa, Ocotol, Sebaco. Generally severe on newly formed branches and foliage.

SESAMUM INDICUM (Ajonjolí, Sesame)

Alternaria sp. (Follaje mustio, Leaf spot)

Chinandega, Managua. This and *Cercospora* leaf spot are the most destructive diseases of sesame.

Cercospora sesami Zimm. (Mancha de la hoja, Leaf spot)
Managua.

Fusarium oxysporum Schlecht. (Tizon del tallo, Stem canker)
Managua.

Helminthosporium sesami Miyake (Tizon del tallo, Stem canker)
Managua.

Sclerotium rolfsii Sacc. (Podredumbre de la raíz y del cuello, Southern blight)
Managua.

SOLANUM TUBEROSUM (Papa, Potato)

Alternaria solani (Ell. & G. Martin) Sor. (Mustia temprana, Early blight)
Esteli, Jinotega, Matagalpa.

Erwinia carotovora (L. R. Jones) Holland (Pudricion blanda, Black-leg)
Esteli, Jinotega, Sebaco.

Fusarium sp. (Pudricion seca, Dry rot)
Matagalpa.

Phytophthora infestans (Mont.) d By. (Mustia tardia, Late blight)

Jinotega, Matagalpa. During the dry season under irrigation damage is local, but when warm moist seasons are frequent the disease spreads rapidly and severe attacks occur.

Rhizoctonia solani Kuehn (Pudricion del tallo, Stem rot)
Masatepe.

Streptomyces scabies (Thaxt.) Waksman & Henrici (Sarna, Scab)

Esteli, Jinotega, Masatepe, Matagalpa. On susceptible varieties always severe.

Virus (Mosaico)

Several virus diseases have been observed -- leaf rolling, yellowing, bronzing, and rugose. No attempt has been made to give a complete list.

SORGHUM VULGARE (Sorgo para grano, Grain sorghum)

Colletotrichum graminicola (Ces.) G. W. Wils. (Antracnosis, Anthracnose)
Managua.

Gloeocercospora sorghi D. Bain & Edg. (Mancha anular, Zonate leaf spot)
Managua.

Macrophomina phaseoli (Maubl.) Ashby (Pudricion seca, Dry root rot)
Chinandega, Managua.

Puccinia purpurea Cke. (Roya, Rust)
Managua.

Spacelotheca sorghi (Lk.) Clint. (Carbon cubierto del grano, Covered smut)
Esteli, Managua.

Sphacelotheca cruenta (Kuehn) Potter (Carbon polvoriento del grano, Loose smut)
Managua, Esteli, Condega.

Virus (Mosaico)
A streak virus is uncommonly observed in the Managua area.

SORGHUM VULGARE Pers. var. SUDANENSE (Zacate sudan, Sudan grass)

Collectotrichum falcatum Went
Managua.

Colletotrichum graminicola (Ces.) G. W. Wils. (Antracnosis, Anthracnose)
Managua.

Gloeocercospora sorghi D. Bain & Edg. (Mancha anular, Zonate leaf spot)
Managua.

Helminthosporium turcicum Pass. (Follaje mustio, Leaf blight)
Managua.

Puccinia purpurea Cke. (Roya, Rust)
Managua, Matagalpa.

SORGHUM VULGARE TECHNICUM (Sorgo para Escoba, Broom corn)

Helminthosporium turcicum Pass. (Follaje mustio, Leaf spot)
Managua, Leon, Chinandega. Generally prevalent and may cause complete defoliation of plants.

STENOTAPHRUM SECUNDATUM (Zacate San Agustin, St. Augustine grass)

Piricularia grisea (Cke.) Sacc. (Mancha foliar, Leaf spot)
Managua.

STIZOLOBIUM: See MUCUNA

THEOBROMA CACAO (Cacao, Cacao)

Diplodia theobromae (Pat.) Nowell (Pudricion de la mazorca, Brown rot)
Corinto.

TRIFOLIUM RESUPINATUM (Trebol Persa, Persian clover)

Cercospora zebrina Pass. (Mancha foliar, Leaf spot)
Managua.

TRIPSACUM LAXUM (Zacate Guatemala, Guatemala grass)

Puccinia polysora Underw. (Roya, Rust)
Managua.

TRITICUM AESTIVUM (Trigo, Wheat)

Cladosporium herbarum Fr. (Mycosphaerella tulasnei (Jacz.) Lindau) (Mancha foliar, Leaf spot)
Managua.

Gibberella zeae (Schw.) Petch (Sarna, Scab)
Matagalpa.

Helminthosporium sativum Pam., King & Bakke (Pudricion radicular y el cuello, Crown rot, Root rot)
Diriamba.

Puccinia graminis Pers. (Roya negra del tallo, Stem rust)
La Concordia, Matagalpa.

Puccinia recondita Rob. ex Desm. (Roya de la hoja, Leaf rust)
Matagalpa.

VANILIA PLANIFOLIA (Vainilla, Vanilla)

Uredo scabies Cke. (Roya, Rust)
General.

VIGNA SINENSIS (Frijol de vaca, Caupi, Cowpea)

Cercospora canescens Ell. & G. Martin (Mancha cercospora, Leaf spot)
Managua.

Cercospora cruenta Sacc. (Mancha cercospora grande, Large leaf spot)
Managua. Results in heavy defoliation.

Erysiphe polygoni DC. (Mildiú polvoriento, Powdery mildew)

Chinandega, Jinotega, Managua. Collected mostly in the Oidium stage; however, the conidial stage, Leveillula taurica (Lév.) Arn., was collected in July at Managua.

Sclerotium rolfsii Sacc. (Podredumbre de la raiz y del cuello, Southern blight)
Managua.

Virus (Mosaico)

Several virus diseases have been observed, with greatest prevalence and symptom intensity in the Managua area. Mottling and yellowing are the most common.

ZEA MAYS (Maiz, Corn)

Angiopsora zeae Mains (Roya, rust)
Granada, Managua. Observed for first time in January 1957.

Gibberella zeae (Schw.) Petch (Pudricion de la mazorca, Ear, seed rot)
Esteli, Jinotega.

Helminthosporium maydis Nisikado & Miyake (Mancha pequena de la hoja, Leaf blotch)
Chinandega, Esteli, Jinotega, Managua.

Helminthosporium turcicum Pass. (Mancha grande de la hoja, Leaf blight)
Chinandega, Esteli, Jinotega, Managua, Matagalpa. Common and widespread, causing much damage by leaf destruction, especially on susceptible introduced varieties.

Macrophomina phaseoli (Maubl.) Ashby (Pudricion chancrosa del tallo, Charcoal rot)
Managua.

Phyllachora maydis Maubl. (Mancha alquitranosa, Tar spot)
Esteli, Managua, Matagalpa.

Physotheria maydis Miyake (Mancha de la vaina, Brown spot)
Chinandega, Managua.

Puccinia polysora Underw. (Roya, Rust)
Chinandega, Esteli, Jinotega, Managua, Matagalpa.

Puccinia sorghi Schw. (Roya, Rust)
Jinotega.

Ustilago maydis (DC.) Cda. (Carbon, Smut)
Esteli, Managua, Jinotega. This common corn smut has been much more prevalent at the higher elevations.

Virus (Mosaicos -- Estriamiento y Enanismo)

At least two types of virus disease have been observed in the Managua area. So far the least damaging type, a streak virus, has been observed only in the Managua area; whereas the stunt virus (typical symptoms are dwarfing, yellowing to reddish foliage, slight streaking, early death of leaves, reduced production of pollen and ear or seed) has been observed causing serious damage in the Managua and Rivas areas. These two virus diseases were both recognized for the first time during the 1956 growing season. Extent of the damage with corn stunt appeared to depend on infection time; if at an early stage the plant produced little or no growth or ears. On occasion, infected plants were observed to possess an abnormal number of small ears. Later infection meant an ear but possibly reduced in size. In a 10-manzana crossing block of Rocamex H-501 the male parent exhibited more than 30 percent plants infected at tasseling and almost 100 percent at maturity. The yield losses varied according to the distance of the apparent source of infection.

The streak virus has been considered less destructive, the infected plants making a partial recovery as they become older. Streaked plants have been observed in PD (MS)₆, Hawaiian Sugar Sweet corn, and a Criollo strain referred to as Chinandega White.

ZOYSIA spp. (including Z. japonica, Z. matrella and a number of hybrid selections).
Curvularia lunata (Wakker) Boed. (Crown rot, leaf spot)

Managua. Associated with a rotting at the crown of infected plants with some leaf spotting. The disease was studied by Mrs. Lucy Hastings de Gutiérrez of the Instituto Interamericano at Turrialba, Costa Rica.

INTERNATIONAL COOPERATION ADMINISTRATION, SERVICIO TECNICO AGRICOLA DE NICARAGUA OF THE MINISTRY OF AGRICULTURE IN NICARAGUA; AND NATIONAL FUNGUS COLLECTIONS, CROPS RESEARCH DIVISION, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE

